

**REMARKS**

The Applicants respectfully request further examination and consideration in view of the arguments set forth fully below. Claims 1-12 were previously pending in this application. Within the Office Action, Claims 1-12 have been rejected. Accordingly, Claims 1-12 are currently pending.

**Rejections Under 35 U.S.C. § 112, Second Paragraph**

Within the Office Action, Claims 1-12 have been rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 1 and 7, it is stated within the Office Action that the term “hard” is a relative term that renders the claims indefinite. Specifically, it is stated that hard membrane is not sufficiently described “based on a few examples of suitable thickness values and materials.” [page 3] Applicants respectfully disagree. “The test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1576 (Fed. Cir. 1986). The “hard membrane” included in Claims 1 and 7 is sufficiently described in the specification to provide a standard for ascertaining the requisite degree. The present specification states, “the hard membrane 14 is formed on the polyimide resin layer to the thickness of 0.1 to 5  $\mu\text{m}$ ...the hard membrane 14 is formed on the polyimide resin layer from a film of amorphous carbon hydride containing C and H as the bases.” [Present Specification, page 12, lines 11-14] Furthermore, it is also stated, “[t]he protective layer should desirably be low in stress while being high in hardness.” [Present Specification, page 12, lines 18-19] A person having ordinary skill in the art would know what hard is based on the comparable thickness and material described within the specification. Furthermore, hardness is not a subjective term as utilized here. There are many different scales for objectively determining hardness. Therefore, in the field of art, specifically, magnetic sensor protection layers, one with ordinary skill is able to know what constitutes hard and what does not. For at least these reasons, Claims 1 and 7 are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

**Rejections Under 35 U.S.C. § 103**

Within the Office Action, Claims 1-6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,755,426 to Kokai et al. ("hereinafter Kokai") in view of U.S. Patent Application No. 2002/0114980 to Gonsel et al. ("hereinafter Gonsel"). Applicants respectfully disagree.

Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches "when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased." [Kokai, col. 5, lines 59-64] As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] As recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor.

Gonsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Gonsel, Abstract] However, Gonsel does not teach an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film.

Within the Office Action, it is stated that it would have been obvious to one having ordinary skill in the art to modify the device of Kokai to use the disclosed protective layer over both the recording medium and the magnetic sensor. The applicants respectfully disagree with this conclusion.

As stated previously, Kokai and Gunsel should not be combined as they teach away from each other. Within MPEP §2145, “it is improper to combine references where the references teach away from their combination.” In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983) Kokai teaches “the thickness of the protective layer of the present invention is from 50 Å to 1,000 Å, preferably from 50 Å to 300 Å. When the thickness of the protective layer is less than 50 Å, sufficient protective effect is not achieved.” [Kokai, col. 2, lines 42-47] Gunsel admits in the background, “that the thickness of the lubricant layer (or film) and the thickness of the protective layer should sum to about 3 nm or less.” [Gunsel, paragraph 0010] Furthermore, Gunsel teaches the desired thickness of the lubricant layer ranges from about 5 Å to about 25 Å in some embodiments or 5 Å to about 15 Å in other embodiments. [Gunsel, paragraph 0116] It is well known that, 10 Å = 1 nm. Hence, the minimum thickness taught by Kokai is 5 nm. In Gunsel, the sum of the lubricant layer and protective layer is 3 nm, and the lubricant layer is between 0.5 nm and 2.5 nm, thus the protective layer is between 2.5 nm and 0.5 nm, far below the minimum allowed by Kokai. Hence, Gunsel teaches a protective layer below the minimum thickness permitted by Kokai, thus the two should not be combined as they teach away from each other. It is stated within the Office Action it is only a matter of increased knowledge of thirteen years from Kokai to Gunsel which is the basis for the discrepancy in size. However, there is still no hint, teaching or suggestion that what is disclosed by Kokai would function with that which is disclosed by Gunsel.

This is a classic case of impermissibly using hindsight to make a rejection based on obviousness. The Court of Appeals for the Federal Circuit has stated that “it is impermissible to use the claimed invention as an instruction manual or ‘template’ to piece together the teachings of the prior art so that the claimed invention is rendered obvious.” In Re Fritch, 972 F.2d, 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). The Applicant submits multiple independent grounds on which the case for impermissibility rests. As discussed above, Kokai teaches a magnetic recording medium with a specific protective layer. Gunsel teaches a magnetic recording medium, head and method for forming the magnetic recording medium. One of ordinary skill in the art would have had no expectation of success when combining the 5 nm minimum protective layer of Kokai with the magnetic head requiring a 2.5 nm maximum protective layer of Gunsel. Accordingly, there is no hint, teaching or suggestion to warrant the combination of the protective layer of Kokai with the magnetic head of Gunsel. It is simply not permissible to conclude that this is an obvious combination without a hint, teaching or suggestion

to warrant the combination, based on the directive from the Court of Appeals for the Federal Circuit.

It is well settled that to establish a *prima facie* case of obviousness, three basic criteria must be met:

- 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- 2) there must be a reasonable expectation of success; and
- 3) the prior art reference, or references, must teach or suggest all the claim limitations. MPEP § 2143.

The burden of establishing a *prima facie* case of obviousness based on the teachings of Kokai and Günsel has not been met within the Office Action.

There is no motivation to combine the teachings of Kokai and Günsel. As discussed above, Kokai teaches a specific protective layer which at a minimum is 5 nm. Günsel, in contrast, teaches a protective layer which at a maximum is 2.5 nm. Although there were advances in disk drive technology in the time between Kokai and Günsel, there is no indication that the protective layer of Kokai is compatible with those advances. Thus, there is no teaching or suggestion that it should be used with those advances. Hence, Kokai cannot be properly combined with Günsel. Accordingly, the rejection of Claims 1-12 based on the combination of Kokai and Günsel, is not proper and should be withdrawn.

In contrast to the teachings of Kokai, Günsel and their combination, the present invention is directed to a magnetic sensor. The magnetic sensor includes a substrate having a magnetism-sensitive element formed thereon, a hard membrane formed on the outermost surface, an organic film under the hard membrane to relieve the stress caused by the hard membrane and an inorganic film between the organic film and the magnetism-sensitive element to relieve the stress caused by the organic film. Also, an intermediate film formed from an element having a large force of bonding to carbon is able to be formed between the organic film and hard membrane.

The independent Claim 1 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 1 has an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film, wherein said magnetic sensor has said hard membrane disposed opposite to the medium, and relatively moves along said

medium. As described above, the combination of Kokai and Gonsel is improper. Furthermore, even if considered proper, neither Kokai, Gonsel nor their combination teach an inorganic film formed on the magnetism-sensitive element. For at least these reasons, the independent Claim 1 is allowable over the teachings of Kokai, Gonsel and their combination.

Claims 2-6 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Kokai, Gonsel and their combination. Accordingly, Claims 2-6 are all also allowable as being dependent upon an allowable base claim.

Furthermore, with respect to Claim 3, having an intermediate film formed between the organic film and hard membrane, neither Kokai, Gonsel nor their combination teach an intermediate layer. Applicant respectfully disagrees with this assertion within the Office Action. As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] At most there are four total layers utilized at once in Kokai. The present invention, in some embodiments, has a magnetic sensitive element, an organic film, an inorganic film, an intermediate film and a hard membrane, thus five layers. Hence, there is nothing in Kokai to correspond with the intermediate film of the present invention. [Present Specification, page 14, line 19 through page 15, line 2] For at least these reasons, Claim 3 is allowable over the teachings of Kokai, Gonsel and their combination.

Within the Office Action, Claims 7-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kokai in view of Gonsel and further in view of applicant's admissions. Applicants respectfully disagree.

As described above, Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches "when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased." [Kokai, col. 5, lines 59-64] As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous

carbonaceous protective layer 11. As recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor.

Also as described above, Gunsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Gunsel, Abstract] However, Gunsel does not teach an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and a hard membrane formed on the organic film.

Furthermore, the combination of Kokai and Gunsel is improper as explained above. For all the same reasons, the combination of Kokai, Gunsel and applicant's admissions is improper.

In contrast to the teachings of Kokai, Gunsel, applicants' admissions and their combination, the present invention is directed to a position detector. The position detector includes a magnetic scale and a magnetic sensor. The magnetic sensor includes a substrate having a magnetism-sensitive element formed thereon, a hard membrane formed on the outermost surface, an organic film under the hard membrane to relieve the stress caused by the hard membrane and an inorganic film between the organic film and the magnetism-sensitive element to relieve the stress caused by the organic film. Also, an intermediate film formed from an element having a large force of bonding to carbon is able to be formed between the organic film and hard membrane.

The independent Claim 7 is directed to a position detector. The position detector of Claim 7 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, and a hard membrane formed on the organic film, wherein said magnetic sensor has said hard membrane disposed opposite to the magnetic scale, and relatively moves along the magnetic scale to detect position signals provided on the magnetic scale. As described above, the combination of Kokai, Gunsel and applicant's admissions is improper. Furthermore, even if considered proper, neither Kokai, Gunsel, applicant's admissions nor their combination teach an inorganic film formed on the magnetism-sensitive element. For at least these reasons, the

independent Claim 7 is allowable over the teachings of Kokai, Gonsel, applicants' admissions and their combination.

Claims 8-12 are dependent upon the independent Claim 7. As discussed above, the independent Claim 7 is allowable over the teachings of Kokai, Gonsel, applicants' admissions and their combination. Accordingly, Claims 8-12 are all also allowable as being dependent upon an allowable base claim.

For the reasons given above, Applicants respectfully submit that all of the pending claims, Claims 1-12, are now in condition for allowance, and allowance at an early date would be greatly appreciated. Should the Examiner have any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,  
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**CERTIFICATE OF MAILING (37 CFR § 1.8(a))**

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